

Random Notes about Coselica Toolbox

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These notes refer to COSELICA Toolbox 0.7 for SCICOS/NSP (Scicos 4.4.1 under NSP 1.0)¹

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1 Interface to/from native Scicos

A model built with COSELICA blocks will be more often connected with one or more native SCICOS blocks than not. All ports of COSELICA blocks are *implicit* ports, therefore you have to use special interface blocks for connections from COSELICA to native SCICOS and vice versa. There are two blocks (in palette `Coselica>Blocks>Interfaces`) for such connections:

¹<http://cermics.enpc.fr/~jpc/nsp-tiddly/>

- **RealInput** (scalar value from native SCICOS to COSELICA)
- **RealOutput** (scalar value from COSELICA to native SCICOS)

Please refer to fig. 1 for an example diagram with connections from COSELICA to native SCICOS and vice versa.

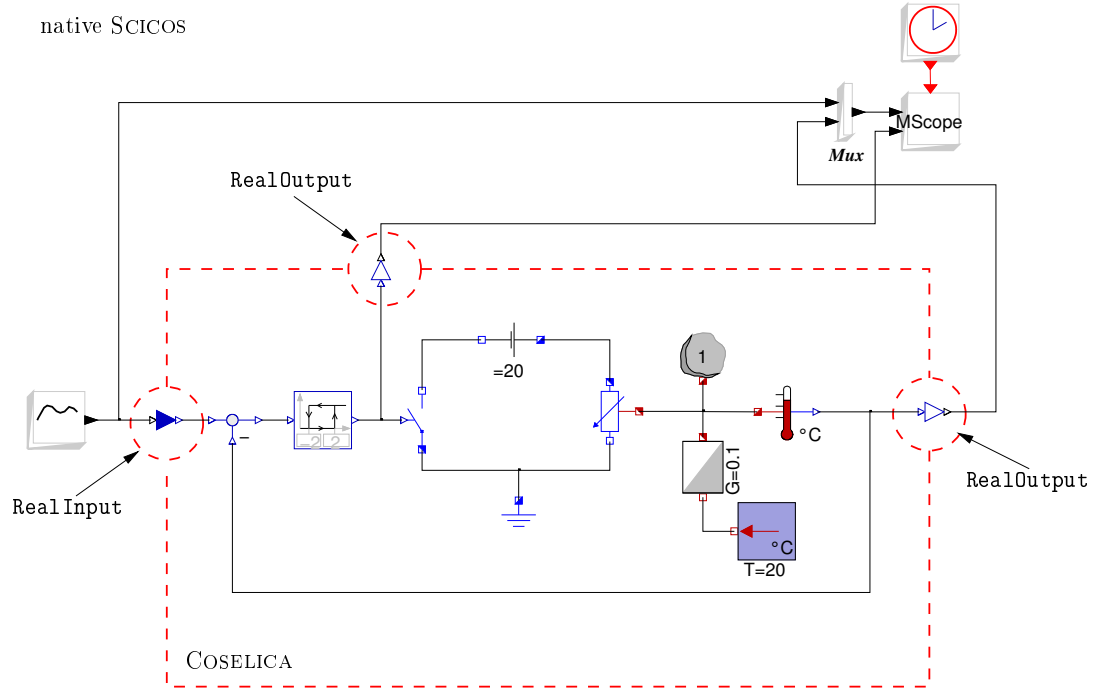


Figure 1: Connections between COSELICA and native SCICOS (example).

2 Naming of Blocks

Naming of COSELICA blocks has two advantageous effects:

- your diagram becomes more readable and informative, and
- named blocks can be spotted easily in the *Modelica Initialisation GUI* (**Simulate|Modelica initialize**) of SCICOS.

In order to name a COSELICA block you have to do the following:

1. Select a block in the diagram editor,
2. **Right-Mouse-Button|Block Properties|Label**,
3. Enter a name and press **Ok**,

4. Diagram|Replot.

As you can see, names of COSELICA blocks are just SCICOS block labels. They don't have to be unique, but it is advisable to use unique labels for COSELICA blocks. Furthermore, they are part of the graphical representation (icon) of a COSELICA block.

3 Working with Signal Vectors

Signal vectors of length 2 (type `Real[2]`) are used by a number of blocks in palette `Coselica>Mechanics>Planar`. Such vectors can be split to scalar signals (type `Real`) and two scalar signals can be joined to a signal vector (type `Real[2]`) by using `Multiplex2` and `DeMultiplex2` found in palette `Coselica>Blocks>Routing`.

It is possible to work with signals of type `Real[n]` in general. For this purpose there are some blocks in the palettes

- `Coselica>Blocks>Routing`
- `Coselica>Blocks>Math>Vectors`

and illustrating examples

- `RoutingReplicatorExtractor`
- `RoutingSimpleThings`
- `MathVectors`
- `VectorsMatrixGain`.

It should be kept in mind, that `Real` and `Real[1]` are *different* types! The SCICOS editor allows connecting a port of type `Real` with a port of type `Real[1]`, but such a connection will lead to a compile time error (ERROR 0015). Thus conversion from `Real` to `Real[1]` or vice versa might be needed and can be implemented using the blocks `Replicator` and `Extractor` from palette `Coselica>Blocks>Routing`.

If your diagram contains COSELICA blocks with ports of type `Real[n]`, then you should force recompilation of the diagram by `Simulate|Compile` whenever `n` is changed *before* you run the simulation by `Simulate|Run`. If „WARNING:varying number of parameter for modelica block is not yet implemented" is displayed in the Scicoslab console window, then you should force recompilation as well and re-run your simulation.

4 Integer Block Parameters

Block parameters of type `Integer` have to be encapsulated within `m2i(...)`. Entering an `Integer` parameter without `m2i(...)` in the `Set Block properties` dialog leads in the end to a compile time error (ERROR 0015).

5 Adjusting Size of Icon Font

Size of text in COSELICA block icons tends to be rather small. You should select View|Icon Font Option|Fix Size or View|Icon Font Option|Variable Size (default), whichever suits your needs best.

6 Migrating Diagrams from Scicoslab 4.4.1

6.1 Update Diagrams in Scicoslab 4.4.1 to Coselica 0.5

Load your diagrams using File|Load and update them as described below.

6.1.1 Replace Obsolete Blocks

Replay *any* blocks from the Obsolete palette in your diagrams. You can easily get information about obsolete blocks in your diagrams by using Coselica|Find Obsolete. This utility counts *all* obsolete blocks in your diagram. Furthermore, it highlights obsolete blocks and super blocks containing obsolete blocks in the current editor window. If your diagram contains obsolete blocks, then consider using Coselica|Upgrade Obsolete. This utility will automatically upgrade most – *but not all* – of the obsolete blocks in your diagram. After having used Coselica|Upgrade Obsolete you should again use Coselica|Find Obsolete to locate remaining obsolete blocks, which have to be upgraded manually.

6.1.2 Fix Antiquated Blocks

Your diagrams may contain *antiquated* blocks, these blocks need a small fix. Only diagrams made with rather old versions of COSELICA may have this defect. However, you can easily check and fix your diagrams using Coselica|Find Antiquated and Coselica|Fix Antiquated.

6.2 Import into Scicos/NSP

Load your updated (cf. sec. 6.1) diagrams using File|Scicoslab Import *immediately* followed by Coselica|Fix Import. Finally use File|Save As to save your successful migrated diagram.

7 Getting Information about Blocks

Currently, there are no help pages at all (hopefully this will change in the future). But you can easily lookup the MODELICA source code for all COSELICA blocks by using your favourite text editor (with file COSELICA/macros/Coselica.mo).